that root-suckers play an important part in the regeneration of some Indian trees, and the author instances the production of practically pure woods of *Diospyros tomentosa* and *Ougenia dalbergioides* by this means, so that the subject is worthy of careful inquiry and observation.

THE September number of the Quarterly Journal issued from the Liverpool University Institute of Commercial Research in the Tropics deals mainly with agriculture on the west coast of Africa. Viscount Mountmorres writes a eulogistic article on the results achieved by the Gold Coast Department of Agriculture, comparing the gardens at Aburi very favourably with the gardens at Konakry, in French Guinea. Rubber and cacao are the primary products at Aburi, and the instruction of the natives in their cultivation and preparation is an important branch of the work. An account of the agricultural resources of the Ivory Coast, contributed by Mr. E. Castaing, provides interesting information as to the commercial varieties of the indigenous rubbers, the nature and uses of kola nuts, and the native method of preparing palm-oil.

AN account of the red-rot disease of sugar-cane caused by the fungus *Colletotrichum falcatum* occupies a considerable portion of the third memoir of the Department of Agriculture in India, which deals with fungus diseases of sugar-cane. The author, Dr. E. J. Butler, adduces evidence to show that the disease generally originates in the lower part of the plant, producing eventually characteristic red streaks in the vascular tissues. Amongst other fungal pests, Dr. Butler describes two stem diseases attributed to new species of Cystospora and Sphæronema, and a more serious leaf-spot disease caused by a species of Cercospora also differing from species hitherto recorded.

THE Department of Commerce and Labour, Washington, has issued a report on the blind and deaf (including the deaf and dumb) in the United States, the data having been collected in connection with the twelfth census (1900). At the census itself, however, the work of the enumerators was restricted to a brief preliminary return showing the name, sex, age, post-office address, and nature of the existing defects in all persons alleged to be blind or deaf. More detailed information was then obtained by direct correspondence with the individuals named in the primary returns, or with their parents or guardians, questions being asked as to the total or partial character of the defect, the age at which the defect, if not congenital, was first remarked, the supposed cause, the relationship, if any, between the parents, the relatives who were similarly defective, and the school, if any, at which the defective person had attended. It is from the data contained in these personal returns that the report is compiled. Dr. Alexander Graham Bell is responsible for the scope and conduct of the investigation, and the text of the report relating to the deaf. It may be noted that of the blind whose parents were cousins 25 per cent. were congenitally blind, whilst of the blind whose parents were not so related only 7 per cent. were congenitally blind. Similarly, of the deaf whose parents were cousins 42 per cent. were congenitally deaf, whilst of the deaf whose parents were not so related only 15 per cent. were congenitally deaf. The report is a valuable one, with much more, and more trustworthy, information than has yet been obtained in any similar investigation, but it suffers from a common defect, viz. the lack of comparative information of a similar kind relating to the non-defective, which is essential to a proper interpretation of the results; this especially applies to the statistics relating to defective relatives and to the consanguinity of the parents. The need is only partially met by the comparative figures for congenital and non-congenital defectives.

A NOTE by Signor Alessandro Artom on his system of wireless telegraphy, first invented in 1903, is contributed to the *Atti* of the Lincei Academy, xv. (1), 12. The peculiarity of this system is that by the use of two aërial conductors instead of a single antenna an unsymmetric electromagnetic field is produced, and it is thus possible to send messages in definite directions. Experiments have been made with the cooperation of the Italian naval authorities, chiefly between Monte Mario (Rome), Anzio (distant 55 km.), and the island of Maddalena. By varying the orientation of the aërials, communication could be established or cut off at will.

THE new "Dolomiten Strasse" brings many of the most interesting portions of the Dolomite region within easy access. Leaving Cortina, it rises rapidly over the Col di Falzarego, passing over a shoulder of Monte Nuvolau, and affording a fine distant view of the Marmolata ice fields. It then descends rapidly to Pieve Livinallonga, where it skirts the hill-side at a considerable height above the valley, and it next rises by zigzags to the top of the Pordoi Pass, passing close by some of the most interesting members of the Sella group. From here it descends to Campitello, whence Botzen may be reached *viâ* the Karersee. The new road is completed with the exception of the portion from the Col di Falzerego to Cortina, where the old road is available for vehicular traffic.

A "NATURE-KNOWLEDGE DIARY," compiled by Mr. W. Percival Westell, has been published by Messrs. Blackie and Son, Ltd. Provision is made for plotting the daily barometer readings on a suitably numbered squared paper chart, but it does not seem to have occurred to the compiler that thermometer readings are also worth plotting, and that the same charts can be used for this purpose. The general arrangement of the blank forms for recording observations, of which the diary is almost entirely made up, is likely to prove convenient. The price of the book is 6*d*. net.

THE eighth edition of Prof. R. Hertwig's "Lehrbuch der Zoologie" has just been published by Mr. Gustav Fischer, Jena. The work originally appeared fifteen years ago, and was reviewed in NATURE of June 22, 1893 (vol. xlviii., p. 173).

OUR ASTRONOMICAL COLUMN.

DISCOVERY OF A NEW COMET.—A telegram from the Kiel Centralstelle announces the discovery of a new comet at Copenhagen on November 10. Its position at 17h. 3·5m. (Copenhagen M.T.) was

R.A. = 9h. 16m. 3·2s., dec. = 12° 28′ 31″ N.,

and it is travelling in a north-easterly direction. The daily movement is given as +4·2m. in R.A. and +1° 10′ in declination. When discovered, the comet was about 8m. west of ϵ Leonis, and is therefore travelling towards the constellation Leo. Its position rises, at present, at about 11 p.m.

A second telegram from the Centralstelle informs us that this object was observed by Herr Rheden at Vienna on November 11, its position at 16h. 7·5m. (Vienna M.T.) being

R.A. = 9h. 20m. 9s., dec. = +13° 35′ 25″.

Unfortunately no idea of the comet's brightness is given in these telegrams.

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THE TELLURIC LINES IN THE SOLAR SPECTRUM.—M. Štefánik is proceeding with his researches on the direct observation of the infra-red portion of the spectrum, and publishes an account of his most recent results in a communication to the Paris Academy of Sciences (*Comptes rendus*, No. 17). After briefly reciting the history of our knowledge of the telluric bands and lines, the author describes the two spectroscopes with which he carried out his researches at Chamonix, at the Grands-Mulets, and on the summit of Mont Blanc. In each case he employed the red screens which he has previously described, and by this means was able to see the region of the spectrum which extends from about B to 1 μ. On July 21, at the Grands-Mulets, he observed the setting sun with his prism spectroscope, and found that as the sun sank lower the group a was unequally strengthened in parts, whilst several feeble bands became visible between a and A. The groups Z, X, and Π were successively reinforced, notably more so as the sun sank into the haze gathered at the horizon. Similar observations made with the grating spectroscope at the summit of Mont Blanc on July 30 gave similar results, and a feeble band appeared between the groups A and Z. The increase in intensity of the groups Z and π was so considerable that their telluric origin was very obvious. Zenith observations revealed changes which in general were of the opposite character. At all three stations M. Štefánik obtained a number of photographs when the sun was highest and at the horizon, respectively, with both spectroscopes.

THE NUMBER OF THE VISIBLE STARS.—The total number of stars usually supposed to be visible in the largest telescopes and on the best photographs is about one hundred million, but according to a computation recently made by Mr. Gore this number must be accepted as the outside maximum. To obtain his results Mr. Gore made a number of counts on the photographic prints given in the late Dr. Roberts's volume of stellar photographs, and found that the average number of stars per square degree was 4137 in the Milky Way, 1782 near the Milky Way, and 408 in the non-galactic regions. Combining these results with the estimated areas of galactic and non-galactic regions published by Prof. E. C. Pickering, he obtained as the grand total of visible stars the number 64,184,757. This is probably smaller than the actual total, as some of the fainter star images would probably be lost in the reproduction of Dr. Roberts's photographs.

Clusters and nebulæ were avoided in making the counts, so that Mr. Gore's total will have to be increased on this account. In another count the average richness of the irregular clusters came out as 5752 stars per square degree, but this is far below the average richness of the globular clusters, one of which, ω Centauri, shows 25,000 stars per square degree (*Observatory*, No. 376).

STARS WITH PECULIAR SPECTRA.—In No. 4129 of the *Astronomische Nachrichten* Dr. H. Ludendorff discusses the spectra of the stars R Coronæ Borealis, 12 Canum Venaticorum, and 72 Ophiuchi, which he and Dr. Eberhard have photographed with the three-prism spectroscope (No. iv.) of the Potsdam Observatory. The remarkable feature in the spectrum of R Coronæ is the non-appearance of the hydrogen lines Hβ, Hγ, and Hδ; as the H and K lines are broad, the absence of Hϵ cannot be affirmed, but on a smaller scale spectrogram the ultra-violet lines of hydrogen do not appear. From the measurement of about thirty or forty lines on each of five spectrograms, Dr. Ludendorff finds the radial velocity of this star to be about +24·6 km. as compared with Prof. Frost's value of +14 km. The present values were, however, obtained during a period when the star was at its normal brightness, whereas Prof. Frost's referred to a period when it was fainter. It thus appears that the radial velocity may vary during the epochs of magnitude changes.

In the spectrum of 12 Canum Venaticorum, Dr. Ludendorff suspects changes in various chromium and iron lines. The magnesium line λ 4481 also appears to vary, and, whilst he can find no reason for the variation, Dr. Ludendorff suggests that this may be analogous to a similar phenomenon which Sir Norman Lockyer has pointed out in the spectrum of α Andromedæ, both stars being of the Markabian type.

AN INTERESTING VARIABLE STAR.—In No. 4126 of the *Astronomische Nachrichten* Prof. Barnard publishes the results of his visual observation of a variable situated in the brightest part of the cluster M3 (N.G.C. 5272).

Observations were made on 112 nights since March, 1899, and from the results the period was found to be 15·77594 days. The maximum magnitude of this object is about 12·0, and it varies through about two magnitudes.

CATALOGUE OF DOUBLE STARS.—Prof. Doberck continues the results of his double-star observations at the Hong Kong Observatory in Nos. 4130–1 of the *Astronomische Nachrichten*. The present list is similar in form to those previously published, and contains the results for about 170 stars.

THE TENTH INTERNATIONAL GEOLOGICAL CONGRESS.

THE tenth International Geological Congress met this year in Mexico, and the proceedings connected with it extended altogether over a period of nearly two months. Elaborate arrangements for the reception and entertainment of the members were made by the Mexican authorities; the President of the Republic, General Porfirio Diaz, himself manifested a lively interest in the work of the congress, and desired that everything possible should be done to make it successful. Over and above this, liberal financial assistance was rendered, the Mexican Government bearing half the cost of the steamer and railway fares of those attending the meeting.

In all, more than six hundred membership tickets were issued; members resident in Mexico of course predominated, and second place was taken by those from the remainder of the North American continent; of European countries, Germany was most strongly represented, which was perhaps natural in view of the large number of Germans who are engaged on the Mexican Geological Survey. It was surprising to find so few British representatives present, considering the great attractions which the country offers both to the geologist and to the mineralogist; all told, there were not more than five members who could reasonably be said to be representative of British science, and not one of these was officially delegated to the congress. This apparent indifference did not pass without comment on the part of the Mexican officials.

Several fairly long excursions, which will be referred to later, were arranged to take place before the meetings, but the formal proceedings of the congress began with the meeting of the council on the morning of Thursday, September 6, when the general arrangements were finally settled, and a programme of papers, &c., was drawn up for approval at the opening session; this took place the same forenoon in the hall of the old Minería (now part of the National School of Engineering). This meeting was presided over by President Diaz, who also, at the conclusion of the business, formally declared the congress open. In addition to the speeches of welcome, and addresses by the retiring president and the president-elect, the only business consisted in the approval of the proposed programme and of the proposed executive committee. The principal offices in the executive were filled by the election of the corresponding officers of the provisional committee in Mexico, as follows:—*president*, José G. Aguilera, director of the National Geological Institute (the Geological Survey); *general secretary*, Ezequiel Ordoñez; and *treasurer*, Juan D. Villarello, both of whom are also on the Survey.

The first of the ordinary meetings (which were held in the newly-completed National Geological Institute) took place on the afternoon of Thursday, September 6, under the presidency of Prof. Credner (Leipzig). A letter was first read from Mr. Karpinski (St. Petersburg), accompanying a copy of his memoir on "Les Trochilisques"—doubtful fossils occurring only in the Devonian—after which Mr. G. H. Heilprin read a communication on "The Occurrence and Interrelation of Volcanic and Seismic Phenomena," in which he maintained the view that shocks of tectonic origin are scarcely to be dis-

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